Formulation and Characterization of Micelles Based Hydrogel For Topical Delivery

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ABSTRACT

Psoriasis is a common, chronic skin disorder, characterized by thickened, scaly patches or plaques of skin which results due to excessive production of skin cells. Dithranol drug is an effective drug used in treatment of psoriasis. The aim of investigation was to prepare and characterize micelles based hydrogel as topical delivery of Dithranol to treat Psoriasis. Micelles were prepared using different surfactant like SDS and Tween 80 and block copolymer like Pluronic F127 and characterize for particle size, entrapment efficiency and drug release. The optimized micelles solution had SDS at a concentration 0.8% w/v. The optimized SDS micelles showed particle size and zeta potential found to be 138.4 nm and -24.7mV respectively. The drug loading was found to be 74.5%. These Micelles based hydrogenl of dithranol was prepared by dispersing gelling agent like 2% HPMC K100M in drug loaded micelles which shows good viscosity and spreadability. The *in vitro* drug release from hydrogel was found to be 81.27% in 8 hrs which indicated that the drug bound in inner core of micelles can be released easily. The data obtained

were analyzed by kinetic model showing zero order release. Result of stability studies conducted at 40° C ± 2°C and 75% ± 5% relative humidity (RH) revealed that formulation to be stable. Hence, it can be concluded that micelles based hydrogel can effectively used as topical delivery in the treatment of psoriasis.

Keywords: Dithranol, Micelles based hydrogel, Relative Humidity